How to Become the Color Management Champion

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“How I Saw Color Management”
A Changing Industry

Our clients are changing how they purchase and manage print, but they still hold us accountable for the creative reproduction

- Internalization of production & procurement
- Unscoped color corrections, color surprises at proof stage, and errors on printed pieces
- Production delays and write-offs

- We needed a unified Color Management Workflow
  - We can no longer rely on our vendors to stabilize our back-end
What is Color Management?

Accurate representation of color throughout the entire creative and production processes

- Controlling color by science rather than the human eye
- Maintaining a visually similar appearance from source to destination
- Your workflow safety net
- Accurate, Repeatable, Consistent
Holistic Approach vs. Siloed Approach

- Increase efficiencies and reduce costs
- Streamline designing, proofing, and press approvals
- Getting surprises less and what you’re expecting more
- Communicating your brand to a printer
- Check and assess printers before you use them
This Isn’t a New Concept or Challenge

Designers, producers, and printers have been trying to predict and control the reproduction of color on paper for decades

- How do you get there?
  - A group effort between developers, designers, producers, and printers
  - Communication
  - Combination of hardware, software & procedures = Workflow
The Importance of Brand Color

Color is the first impression of your brand to a consumer

- Color influences 50%–85% of purchasing decisions
  - 66% of all consumer packaging decisions are made at the shelf, most in under 4 seconds
- Recall by 82%
- Brand recognition by 80%
- Comprehension by 73%
Color Can Even Convey Emotions, Feelings and Experiences

- **Red**: Encourages appetite, conveys urgency
- **Blue**: Associated with tranquility and water, preferred by men
- **Green**: Associated with nature but also health and power
Color Can Even Convey Emotions, Feelings and Experiences

- **Purple**: Reserved for royalty, respect and wisdom
- **Orange / Yellow**: Cheerful and optimistic, yet cautious
- **Black**: Authority, strength, and power
- **White**: Purity and cleanliness
What Happens When We Take the Color out of a Brand?

Instagram @kunelgaur
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Color Space vs. Color Gamut

In commercial printing 4 color printing is considered full color

- 4/c ≠ Full Color
- Conventional 4/c printing can roughly reproduce 100,000 shades of color
- The human eye can see 1–10 million

RGB is a much larger color space and is never apples-to-apples with CMYK
Color Space vs. Color Gamut
The 5th Color: Paper

Paper will have an impact on how your finished colors look

- Emphasizes cool and warm tones

- But what about coatings?
  - Varnish yellow over time vs. Aqueous
  - Matte slightly shifts color vs. Gloss
  - Laminates pull Red & Yellow
Why Does Everyone Love Smooth, Bright-White Sheets?

Brighter the surface, brighter the color

- Intensity
  - OBAs
  - Artificially white or “blue”
  - Adds to the perception or brightness and whiteness

Whiter the surface, wider the gamut

- Range
  - White paper reflects all colors equally

Smotherer = Crisper

- Rougher surfaces reflect scattered light
The Color of Light

Impacts every aspect of the consumer experience

- Grocery Stores
- Retail Chains
  - 50%–85% of purchasing decisions influenced by color
  - 66% of packaging decisions are made at the shelf
  - Direct correlation to sales
Viewing Conditions

- D50 ≠ 5000K
  - Not all 5000K are the same
  - Correlated Color Temperature (CCT)
  - D50 is an absolute (theoretical) point

- Supported across the graphic arts and printing industries

- Paint
  - Neutral Gray
  - Flat / Matte
  - Low reflectance
  - Munsell N5, N7 & N8

![Munsell N5, Munsell N7, Munsell N8](image-url)
A Quick Recap

- Color Management
- Importance of Brand Colors
- Color Space vs. Color Gamut
- Paper
- Lighting and Viewing Conditions
So Where Do I Start?

- Define your workflow
  - Don’t over scope

- Define your brand needs
  - Identify your branding standards
    - 4/c vs. Solids
    - CMYK, RGB, HEX & LAB values

- Compliance
  - Holistic approach from the top down
  - Build brand owners
Good Color Management

Starts with Design

- Work in RGB & Preview in CMYK
  - Development
  - Retouching
  - Layout

Stabilizes in Pre-Press

- Asset Management
  - Retain RGB
  - Separate to CMYK
    - Convert to correct working space only once
  - Inconsistent CMYK & PMS
    - C, CP & U
    - Adobe conversions
RGB Working Space

- sRGB is the default color space the world
  - 35% of all visible colors
  - Developed in part by Microsoft for early Web on CRT monitors
  - New monitors can produce much larger Gamut

- Adobe 98
  - 35% more gamut than sRGB
  - Developed by Adobe to encompass most of the colors achieved in CMYK
  - Can convert to sRGB downstream
CMYK Working Space

Inaccurate and unsupported color profiles & non-standardized conversions

- **US Web Coated V2 (SWOP)**
  - Default CMYK ICC Profile since the 90s

- **GRACoL ‘13**
  - Compensates for OBAs in today’s commercial grade #1 papers

- **SWOP ‘13**
  - Accounts for publication grade #3 papers
GRACoL ’13 vs. SWOP V2
GRACoL '13 vs. sRGB vs. ARGB
Common Workflow Problems

The same image appears different when...

- Printed on different printers
- Viewed on different monitors
- Printed on a printer vs. viewed on a monitor
- Viewed in a lightbox vs. office lighting
Siloed Workflow

Hero Imagery → Photographer $RAW/sRGB$ → Monitor $sRGB$ → Creative $sRGB$ & CMYK → Monitor $sRGB$ → Laser Printer $SWOP V2 CMYK$

Final Product $GRACoL CMYK$ → On Press $GRACoL CMYK$ → Final Proof $GRACoL CMYK$ → Revised Proof $GRACoL CMYK$ → 1st Proof $GRACoL CMYK$ → Digital Asset $SWOP V2 CMYK$
Use a Supported G7 Print Target

- Characterized Reference Print Condition (CRPC)
  - Examples
    - GRACoL 06 / 13
    - SWOP 06 / 13
    - XCMYK 2017
    - Fogra 39
    - Fogra 51

- Design for G7
  - Design in RGB
  - Preview in GRACoL
  - Separate & Proof in GRACoL
  - Print in GRACoL
Use a Supported G7 Print Target

- CRPC1
- CRPC2
- CRPC3 - GRACoL Uncoated
- CRPC4
- CRPC5 - SWOP 2013 - #3
- CRPC6 - GRACoL 2013 - #1
- CRPC7
Why G7 Matters

- Gray balance calibration method
- Unambiguous definition of gray
- Works on anything that prints CMYK
- Media agnostic
- Sheet fed = GRACoL
- Web = SWOP
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Assess Your Supply Chain

- Many times, the printer is picked for the wrong reasons
  - Proximity
  - Promise
  - Friend

- Communicate your brand to your suppliers
  - RGB, CMYK, LAB, PMS
  - Paper brand and finish
  - Color Space and Profiles
  - No Cost
Sync Your Profiles in Adobe Bridge

- Assigning
  - Values stay the same (RGB/CMYK)
  - Images change to simulate how it will look when converted

- Converting
  - Values change (RGB/CMYK)
  - Maintains color visually
Soft Proofing in Adobe Photoshop

Design in RGB, preview in CMYK

Window -> Arrange -> New Window

- CMYK Preview
  - Windows: Ctrl+Y
  - Mac: Cmd+Y

- Out of Gamut Warning
  - Windows: Shift+Ctrl+Y
  - Mac: Shift+Cmd+Y
Soft Proofing in Adobe Acrobat

Tools -> Print Production -> Output preview
Paper Simulation in Adobe Acrobat
Paper Simulation in Adobe Acrobat
Rendering Intents

Saturation
- All colors translate to their brightest possible saturation
- Rich, vibrant colors
- Uncommon and unpredictable

Perceptual
- Multiple out of Gamut colors are compressed (clipped) into the new color space
- Relationship of the colors to each other stay the same
- Retain overall look and feel
Rendering Intents

Absolute Colorimetric
- Out of Gamut colors are clipped into new Gamut closest to the destination edge
- In-Gamut colors remain unchanged
- Use for exact color, logos

Relative Colorimetric
- Similar to Absolute but includes destination profile paper white point
- Proofing
- Default RGB to CMYK conversion
Rendering Intents

Edit -> Color Settings
Now What?

Establish accountable Brand Owners

- RGB workflow through creation, retouching & design
- Accurate CMYK separation
- Asset management and Brand-Book standardization
- Viewing condition stabilization
- G7 ICC and CSF profiles
- Assess your suppliers
Thanks!

Reach out:

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